

PURPOSE AND NEED, STUDY AREA, AND ALTERNATIVES CONSIDERED FOR N.C. 49 IMPROVEMENTS

N.C. 49 from John Kirk Drive to I-485 (widen existing roadway);
realign Back Creek Church Road (S.R. 2827) on new location to the N.C.
49 and Mallard Creek Church Road (S.R. 2833) intersection; close
existing at grade rail crossing at N.C. 49 and Back Creek Church Road
Charlotte, Mecklenburg County

STIP Project U-5768

North Carolina Department of Transportation
And
Charlotte Department of Transportation



MERGER CONCURRENCE POINTS 1 AND 2

November 16, 2017

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- P-5208 EA (2011) – Figure 5

1. INTRODUCTION

The North Carolina Department of Transportation (NCDOT), in coordination with the Charlotte Department of Transportation (CDOT), proposes to widen N.C. 49 (University City Boulevard) from John Kirk Drive to I-485. The project will also realign Back Creek Church Road (S.R. 2827) to intersect with N.C. 49 at Mallard Creek Church Road (S.R. 2833). The current at-grade intersection of Back Creek Church Road and North Carolina Railroad/Norfolk Southern Railroad just south of NC 49 will be closed in conjunction with these improvements. The project location is shown in **Figure 1**.

NCDOT internal scoping took place on November 3, 2015, and the External Scoping Meeting/Merger Screening was held on December 9, 2015. The consensus at that meeting was that the project should follow the Section 404/NEPA Merger Process, but could be removed from the process in the future, if appropriate.

Subsequent to the external scoping meeting, NCDOT coordinated with the U.S. Army Corps of Engineers with regards to the project purpose and segmentation for the proposed realignment of Back Creek Church Road. A technical memorandum on the issue was provided for the Merger Team on June 24, 2016 to clarify this issue. Subsequent outreach to USACE indicated the memorandum was acceptable.

The purpose of today's meeting is to discuss the purpose and need, study area, and alternatives to be studied in detail for the proposed project. Team concurrence will be requested on purpose and need and study area (Concurrence Point 1) and alternatives for detailed study (Concurrence Point 2).

2. PROJECT STATUS, BACKGROUND, SCHEDULE, AND COST

The project is included in the 2018-2027 NCDOT State Transportation Improvement Program and will be funded using both State and local (City of Charlotte) funds. Right of way acquisition and construction are scheduled to begin in Fiscal Years 2019 and 2021, respectively. The project will include the following improvements:

- (1) Widening N.C. 49 to a multi-lane, median-divided facility between John Kirk Road and I-485 (approximately 1 mile),
- (2) Realigning Back Creek Church Road (S.R. 2827) on new location to the intersection of N.C. 49 and Mallard Creek Church Road (S.R. 2833), approximately 1.3 miles, and
- (3) Closing the existing at-grade rail crossing with the North Carolina Railroad (NCRR) on Back Creek Church Road.

Both the proposed improvements to N.C. 49 and the proposed realignment of Back Creek Church Road are included in the 2017 CRTPO Comprehensive Thoroughfare Plan and the 2014 CRTPO Metropolitan Transportation Plan.

EASTERN CIRCUMFERENTIAL ROAD (ECR)

In 1989, the Charlotte-Mecklenburg Technical Coordinating Committee published the Eastern Circumferential Alignment Study. That study investigated four potential alignments for the future Eastern Circumferential Road (ECR), which was proposed to serve as a connection between the University of North Carolina at Charlotte/U.S. 29 North area and U.S. 74 East (Independence Boulevard) at its intersection with Sardis Road North. The ECR was envisioned to provide adequate thoroughfare spacing in eastern Mecklenburg County. The recommended alignment for the ECR as presented in that study followed Back Creek Church Road (S.R. 2827) south of the project area, and it proposed the

realignment of Back Creek Church Road (S.R. 2827) on new location to tie into N.C. 49 opposite Mallard Creek Church Road (see the enclosed Figure 2 from the ECR study in the packet appendix). That recommendation was based on the consideration of likely impacts to homes, businesses, schools, churches, floodplains, parks, and natural areas.

The 1989 ECR study included the evaluation of, but did not recommend, an alternative that would widen existing Back Creek Church Road (S.R. 2827) and Pavilion Boulevard. Under that alternative, a new location connection from Pavilion Boulevard to Mallard Creek Church Road (S.R. 2833) north of N.C. 49 would be required (see Segment A-1 in Figure 2 from the ECR study in the appendix).

The relocation of Back Creek Church Road recommended under the subject project aligns with the recommendation from the 1989 ECR study. The City has reserved a corridor for ECR that includes the realignment of Back Creek Church Road, proposed as part of Project U-5768.

STIP PROJECT P-5208

In October 2011, the Federal Highway Administration, the Federal Railroad Administration, and NCDOT approved an Environmental Assessment (EA) for STIP Project P-5208. The Finding of No Significant Impact (FONSI) for the project was approved in June 2012. That project proposed the construction of an additional railroad track adjacent to the existing track along the North Carolina Railroad (NCRR)/Norfolk-Southern Railway (NS), from south of NC 49 near Concord to Orr Road in Charlotte. P-5208 project construction was recently completed. Project P-5208 also included railroad alignment changes, safety improvements, and railroad crossing improvements. Figure 5 from the P-5208 EA, which shows the limits of the project, is included in the appendix.

The improvements performed as part of P-5208 were designed to be compatible with the NCDOT Southeast High Speed Rail Project (SEHSR). The Tier II SEHSR Record of Decision (ROD) was signed on December 21, 2016.

The EA for P-5208 noted that the existing Back Creek Church Road (S.R. 2827) railroad crossing just south of N.C. 49 was considered as a candidate for closure according to NCDOT's Rail-Highway Grade Crossing Consolidation Selection Process. Under that process, NCDOT recommends closing at-grade crossings to enhance the overall safety of the SEHSR corridor where there are viable options to do so. The EA also noted the following: Back Creek Church Road is a major through route and has a high volume of roadway traffic; there is a short distance between the at-grade railroad crossing; and there are few connecting roadways that can provide access to nearby crossings of the railroad. Closing Back Creek Church Road (S.R. 2827) was not considered prudent without a suitable nearby railroad crossing.

As noted in the P-5208 EA, two alternatives were considered for grade-separating the roadway:

- (1) Constructing a bridge on Back Creek Church Road (S.R. 2827) over NC 49 and the railroad and
- (2) Constructing a railroad bridge over Back Creek Church Road (S.R. 2827).

Due to topographic constraints, access requirements, and potential impacts to nearby residential and business properties, neither alternative was considered prudent, and both were eliminated from further consideration.

Based on the above considerations, Project P-5208 included the construction of a railroad bridge over the future ECR (relocated Back Creek Church Road) just south of the Mallard Creek Church Road (S.R. 2833)/N.C. 49 intersection to allow for the future closing of the existing at-grade railroad crossing on Back Creek Church Road (S.R. 2827) near N.C. 49. The existing crossing was improved as part of Project P-3814A, additional interim improvements were constructed as part of P-5208, to enhance safety.

PUBLIC INVOLVEMENT

NCDOT and CDOT have conducted meetings with the UNCC about the proposed project, given its close proximity to the UNCC campus. Upon concurrence on alternatives to be carried forward (CP2), a project newsletter will be mailed and a public meeting will be scheduled.

Public meetings were held by the City of Charlotte for the Back Creek Church Road (S.R. 2827) Farm to Market project south of U-5768 near Rocky River Road (see page 7) and for the NCDOT Rail Division Project P-5208 (discussed above).

PROJECT SCHEDULE

The tentative project schedule is shown below (these dates are preliminary and subject to change).

- | | |
|-----------------------------------|----------------|
| • Project Technical Reports | 2017 – 2018 |
| • Public Meeting | Early 2018 |
| • Design Public Meeting | May 2018 |
| • Combined SEA/FONSI | September 2018 |
| • Notice of Preferred Alternative | September 2018 |
| • Right-of-Way Acquisition | FY 2019 |
| • Construction | FY 2021 |

COST

- | | |
|--------------------------------|---------------------|
| • Project Development & Design | \$ 2,000,000 |
| • Utilities | \$ 1,300,000 |
| • Mitigation | \$ 925,000 |
| • Property Acquisition | \$ 1,300,000 |
| • Construction Costs | \$36,300,000 |
| • Total Cost | \$41,825,000 |

3. MERGER CONCURRENCE POINT 1 – PURPOSE AND NEED AND PROPOSED STUDY AREA

3.1 ENVIRONMENTAL RESOURCES

Environmental resources in the project area are listed below in **Table 1** and are shown in **Figure 2**.

3.2 EXISTING ROADWAY CONDITIONS AND CLASSIFICATIONS

N.C. 49 currently exists as a four-lane, median divided facility, while Back Creek Church Road is a two-lane facility. The posted speed limit along N.C. 49 is 45 miles per hour (mph), while Back Creek Church Road is posted at 35 mph. None of the above facilities currently provides control of access.

Existing N.C. 49 is classified as a Principal Arterial and is a part of the N.C. 49 Strategic Transportation Corridor R (U.S. 64W/N.C. 49). Back Creek Church Road (S.R. 2827) and Pavilion Boulevard (S.R. 2800) are currently classified as Local Routes. Mallard Creek Church Road (S.R. 2833) is classified as a Minor Arterial. John Kirk Drive is classified as a Minor Collector.

The 2017 CRTPO Comprehensive Transportation Plan includes identifies NC 49 as a Boulevard Needing Improvements, Mallard Creek Church Road as an Existing Boulevard, and Back Creek Church Road as a Recommended Boulevard.

Table 1. Study Area Resources

| Cultural Resources | |
|---|--|
| Archaeology | No Survey Required, December 18, 2015 |
| Historic Architecture | No Historic Properties present or affected by the project, May 20, 2016 |
| Human Environment Resources | |
| Community Resources | 1- Back Creek ARP Church 3 schools – Back Creek Christian Academy (Private), University of North Carolina Charlotte (UNCC), University Meadows Elementary (just north of study area on Pavilion Boulevard) 1 Cemetery (associated with Back Creek ARP Church) |
| Public Parks | 2- University Meadows Neighborhood Park (Mecklenburg County), Back Creek Regional Park (Planned Mecklenburg County) |
| Greenways | Back Creek Greenway (Planned Mecklenburg County) |
| High % Special Populations | Yes- Minority and/or Low Income |
| Natural Environment Resources | |
| Streams (number of crossings) | 14 streams, 5 preliminary stream crossings; streams include Back Creek, 11 unnamed tributaries (UTs) to Back Creek, and 2 UTs to Mallard Creek; all are Class C waters (preliminary, no field JD yet) |
| Wetlands | 8.66 acres of wetlands delineated (preliminary, no field JD yet) |
| Water Supply Watershed Critical Areas | None |
| Stream Mitigation Sites | Back Creek Stream Mitigation Site |
| Riparian Buffer Rules Apply | No |
| Listed Threatened or Endangered Species | Northern Long-eared Bat: May Effect; NLEB exempt from Section 7 consistency with the 4(d) rule Carolina Heelsplitter: Unresolved as per NRTR Michaux’s Sumac: No effect as per NRTR Schweinitz’s Sunflower: No effect as per NRTR Smooth Coneflower: No effect as per NRTR |

N.C. 49 primarily serves regional traffic to/from Uptown Charlotte, the UNCC campus, and areas north and east of Charlotte, in addition to providing access to commercial developments and residential neighborhoods in the study area.

3.3 EXISTING AND FUTURE TRAFFIC CONDITIONS

Daily traffic forecast volumes prepared for the project for the year 2040 are based on the Metrolina Regional Model 2015, Version 1.0 (MRM15v1.0), adopted August 19, 2015. The Model considers the region’s socio-economic data for employment and household projections, along with historical growth rates. **Table 2** lists 2015 AADT in vpd, 2015 LOS (Build and No-Build), projected year 2040 AADT in vpd, and projected year 2040 LOS (Build and No-Build). The majority of the facility currently operates at LOS D or worse, with the entire facility operating at LOS F in the future (2040).

Table 2: Existing (2015) and Projected (2040) No-Build Traffic Volumes on N.C. 49 Sections

| N.C. 49 Segment | 2015 AADT (vpd) ² | 2015 AM LOS No-Build | 2015 PM LOS No-Build | Projected 2040 AADT (vpd) ² | 2040 AM LOS No-Build | 2040 PM LOS No-Build |
|---|------------------------------|----------------------|----------------------|--|----------------------|----------------------|
| East of John Kirk Dr. | 37,000 | F | F | 48,200 | F | F |
| John Kirk Dr. to University Plaza | -- | -- | -- | -- | B | F |
| University Plaza to East Mallard Creek Church Rd. / Back Creek Church Rd. | 41,400 | C | F | 60,200 | F | F |
| East Mallard Creek Church Rd. / Back Creek Church Rd. to Sams Ln. | -- | -- | -- | -- | F | F |
| Sams Ln. to Pavilion Blvd. / Back Creek Church Rd. | 44,300 | F | F | 64,900 | F | F |
| Pavilion Blvd. / Back Creek Church Rd. to I-485 Inner Ramps | 37,000 | D | D | 53,800 | F | F |
| East of I-485 Outer Ramps | 36,800 | B | B | 58,400 | F | D |

Source: NCDOT TPB, 10/05/15.

¹Based on Daily Service Volume for LOS E to F threshold from Highway Capacity Manual 2010, Equation 10-5, p. 10-12.

²2011/2040 No-Build AADT, Project Level Traffic Forecast Report STIP Project U-5768.

3.4 CRASH DATA

With N.C. 49 currently carrying a substantial traffic volume, and projected to carry higher traffic volumes in the future, safety is an important consideration for the project. Without improvements, the number of crashes in this area is expected to grow. Traffic crashes are often considered to indicate deficiencies in the capacity of a transportation facility.

NCDOT-reported crash data was obtained for the project area (along N.C. 49 from 100 feet west of John Kirk Drive to 150 feet east of the I-485 outer loop, including Y-line approaches) for the period from October 1, 2010 through September 30, 2015.

There were 820 reported crashes along the project corridor from October 1, 2010 to September 30, 2015. Of those crashes, the majority (527) involved rear-end, slow, or stop collisions. This type of crash is expected to occur where a combination of high traffic volumes and a large number of slowing, stopping, and/or turning movements cause interruptions to the traffic flow. The most accidents were reported during the months of August, September, and October (more than 85 for each month), and the fewest were reported in March, June, July, and December (fewer than 59 for each month). Of the reported crashes on N.C. 49 for the period outlined above, 147 crashes took place at the intersection of N.C. 49 with S.R. 2800 (Pavilion Boulevard)/ S.R. 2827 (Back Creek Church Road).

In addition to the crashes discussed in above and in Table 3, from 2000 through March 2016, there were six highway vehicle/train crashes at the railroad crossing of S.R. 2827 (Back Creek Church Road).

Officials from UNCC have raised concerns about bicycle and pedestrian safety along the project corridor. From October 1, 2010 to September 30, 2015, NCDOT reports that cars struck 16 pedestrians and two bicyclists along the project corridor.

Table 3 shows a comparison of the crash rates for the N.C. 49 mainline versus the 2010 to 2012 statewide rate and the calculated critical rates with a 95 percent level of confidence for a comparable route type and configuration. Current crash rates exceed the statewide crash rates and critical crash rates for night accidents.

Table 3: Crash Data for N.C. 49 from John Kirk Boulevard to I-485 Outer Ramp (N.C. 49 only, not Y-lines)

| Rate | Crashes | Crashes per 100MVM ¹ | Statewide Rate ² | Critical Rate ³ |
|------------------|------------------|---------------------------------|-----------------------------|----------------------------|
| Total | 598 ⁴ | 767.65 | 798.32 | 851.64 |
| Fatal | 2 ⁴ | 2.57 | 2.62 | 6.28 |
| Non-Fatal Injury | 188 ⁴ | 241.34 | 254.72 | 285.12 |
| Night | 183 ⁴ | 234.92 | 172.35 | 197.47 |
| Wet | 96 ⁴ | 123.24 | 125.92 | 147.48 |

Source: Safety Review for U-5768, Mecklenburg County (NCDOT, 10/30/2015).

¹100MVM = 100 Motor Vehicle Miles traveled

²2010-2012 statewide crash rate for urban 4-lane facilities, median divided with no control of access

³Based on the statewide crash rate (95 percent level of confidence) **BOLD** indicates above critical rate

⁴N.C. 49 only, no Y-lines

3.5 OTHER TRANSPORTATION PROJECTS IN VICINITY

Other transportation projects in the project area include:

- NCDOT: STIP Project P-5208 – Construction completed
- City of Charlotte: Back Creek Church Road (S.R. 2827) Farm to Market project south of U-5768 near Rocky River Road.

3.6 MULTIMODAL TRANSPORTATION

There is an existing multi-use path along the north side N.C. 49 east of John Kirk Drive. Sidewalks are provided at some of the commercial and residential properties on the north of N.C. 49 and in front of the Shell station to the south of N.C. 49. Sidewalks also exist on the east side of a portion of Back Creek Church Road (S.R. 2827). The proposed project would include bike lanes and multi-use paths along N.C. 49 and the realigned Back Creek Church Road. The planned Black Creek Greenway would also cross the realigned Back Creek Church Road.

3.7 SUMMARY OF NEED

The U-5768 project area has the following needs:

- N.C. 49 is currently operating at or close to congested levels. Level of Service (LOS) data for various sections of N.C. 49 through the project area for 2015 and projected LOS for 2040 are

shown in **Table 1**. Based on current and projected 2040 conditions, congestion will worsen if no improvements are made.

- From 2000 through March 2016, there were six highway vehicle/train crashes at the at-grade crossing on Back Creek Church Road (S.R. 2827) at NCR/NS just south of NC 49. The current typical train traffic at this location as reported by Norfolk Southern is 38 trains per day. Train volumes are expected to double by the design year (2040). The railroad design speed through the proposed project study area has been improved to 79 miles per hour for passenger trains and 60 miles per hour for freight trains as part of Project P-5208. Vehicle traffic on Back Creek Church Road at the railroad crossing is currently 17,300 vehicles per day, and that volume is projected to increase to 20,600 vehicles per day by 2040 under a No-Build Scenario. Thus, the potential for vehicle/train collisions will grow if the crossing remains open. Closing the railroad crossing would eliminate the possibility for a collision between trains and vehicles. Removing the possibility for a collision would also improve rail operations because there would never again be a delay to investigate an incident at the crossing, clear the crash site, or replace the train crew. Also, with the crossing removed, the train would no longer need to blow the horn prior to crossing Back Creek Church Road, which would be a benefit to the public.
- With the proposed closing of the railroad crossing on Back Creek Church Road, the existing network connectivity between the Rocky River area and N.C. 49 would be lost. The lack of other nearby travel routes to cross the railroad tracks to access N.C. 49 would result in a substantial amount of out-of-the-way travel. Travel distances would increase by 3.5 miles to 7.5 miles, depending on the route chosen, as compared to maintaining the existing railroad crossing (see **Figure 3** for available alternate travel routes). Additionally, the alternate travel routes would send thoroughfare traffic on residential streets that have speed limits as low as 25 miles per hour.
- Traffic volumes and lack of accommodations along N.C. 49 limit bicycle and pedestrian activity along regionally important multi-modal transportation routes. CDOT, UNCC, and University City Partners have cited the need to accommodate pedestrians and bicycles in any proposed improvement.

3.8 PROPOSED STUDY AREA

The proposed study area is shown in **Figures 1** and **2**. The study area extends 500 feet west of John Kirk Drive and 500 feet east of the eastern on-ramps for I-485 along N.C. 49 and generally parallels N.C. 49 to the north. To the south of N.C. 49, the study area includes existing Back Creek Church Road (S.R. 2827), as well as the corridor the City of Charlotte Department of Transportation (CDOT) has reserved for the proposed realignment of Back Creek Church Road. The corridor reserved by CDOT for the proposed realignment of Back Creek Church Road was chosen so as to limit the number of residential relocations and provide a more perpendicular crossing of Back Creek and unnamed tributaries (UTs) to Back Creek. The alignment for Relocated Back Creek Church Road will be reviewed in the development of the CP 2 alternatives and further discussed at the CP2A meeting. The proposed CP 1 concurrence form, which includes the proposed study area statement, is included in the Appendix.

3.9 PROPOSED PURPOSE AND NEED STATEMENT

The proposed purposes of the proposed project are:

- (1) to reduce traffic congestion, improve traffic flow, and enhance traffic operations on N.C. 49 between John Kirk Drive and I-485 with the goal of achieving an overall Level of Service (LOS) D for intersections along the project corridor;

- (2) to improve safety and enhance train and vehicle operations at the railroad crossing on S.R. 2827 (Back Creek Church Road) near N.C. 49; and
- (3) to maintain network connectivity between the Rocky River area of east Charlotte and N.C. 49.

The proposed CP 1 concurrence form, which includes the proposed purpose and need statement, is included in the Appendix.

4. MERGER CONCURRENCE POINT 2 – ALTERNATIVES TO BE STUDIED IN DETAIL

4.1 NO-BUILD ALTERNATIVE

The No-Build Alternative is the baseline comparative alternative for the design year (2040). The No-Build Alternative would not provide any substantial improvements to the N.C. 49 corridor. In addition, it would leave in place the at-grade railroad crossing on Back Creek Church Road (S.R. 2827) near N.C. 49.

4.2 BUILD ALTERNATIVES

Two build alternatives, Alternatives A and B, are proposed for further analysis. Both alternatives would pass under the existing railroad bridge that was constructed as part of P-5208 on NCRR/NS just south of NC 49. Both alternatives would include the following:

- The widening of existing N.C. 49 to a six-lane divided facility with curb and gutter and 12-foot multi-use paths on both sides of the road.
- The relocation of S.R. 2827 (Back Creek Church Road) on a new alignment to connect with N.C. 49 at S.R. 2833 (Mallard Creek Church Road). A four-lane divided facility with curb and gutter and multi-use paths is proposed.
- The construction of roundabout on S.R. 2939 (Old Concord Road) at John Kirk Drive south of NC 49 to improve traffic flow and the extension of S.R. 2939 (Old Concord Road) eastward to Relocated Back Creek Church Road to provide additional connectivity.
- The extension of Thomas Combs Drive westward to Mallard Creek Church Road (S.R. 2833) north of NC 49 to provide additional connectivity.

In addition to the above improvements, the two Build Alternatives would also include the following:

- **Alternative A** (see **Figure 4**) would include a grade-separated crossing on N.C. 49 over S.R. 2833 (Mallard Creek Church Road)/Relocated Back Creek Church Road.
- **Alternative B** (see **Figure 5**) would include an at-grade intersection on N.C. 49 at S.R. 2833 (Mallard Creek Church Road)/Relocated Back Creek Church Road.

“Best Fit” improvements will be evaluated to improve N.C. 49 and for the proposed relocation of Back Creek Church Road to minimize impacts and costs and to accommodate maintenance of traffic during construction. Conventional and Superstreet concepts will be evaluated for both Alternative A and Alternative B. The proposed typical sections for Alternatives A and B are shown in **Figure 6**.

APPENDIX

- CP 1 and CP 2 Concurrence Forms
- Figures
- Eastern Circumferential Road Study (1989) – Figure 2
- P-5208 EA (2011) – Figure 5

NEPA/404 Merger Team Meeting Agreement

Concurrence Point Number 1: *Project Purpose and Need & Study Area Defined*

Project Description: N.C. 49 from John Kirk Drive to I-485 (widen existing roadway); realign Back Creek Church Road (S.R. 2827) on new location to the N.C. 49 and Mallard Creek Church Road (S.R. 2833) intersection; close existing at grade rail crossing at N.C. 49 and Back Creek Church Road, Charlotte, Mecklenburg County. **STIP Project: No. U-5768.**

Purpose and Need of Proposed Project

The needs to be addressed by this project include:

- N.C. 49 is currently operating at or close to congested levels.
- From 2000 through March 2016, there were six highway vehicle/train crashes at the NCRR/NS at-grade rail crossing on Back Creek Church Road just south of NC 49. Current typical train traffic as reported by Norfolk Southern is 38 trains per day, and train volumes are expected to double in the future, as this crossing is located within the proposed NCDOT Southeast High Speed Rail corridor.
- With the proposed closing of the S.R. 2827 (Back Creek Church Road) railroad crossing at NCRR/NS, the existing network connectivity between the Rocky River area to the south and N.C. 49 would be lost.
- Traffic volumes and lack of accommodations along N.C. 49 limit bicycle and pedestrian activity along regionally important multi-modal transportation routes. CDOT, UNCC, and University City Partners have cited the need to accommodate pedestrians and bicycles in any proposed improvement.

The purposes of the proposed project are to reduce traffic congestion, improve traffic flow, and enhance traffic operations on N.C. 49 with the goal of achieving an overall Level of Service (LOS) D for intersections along the project corridor, improve safety and enhance train and vehicle operations, and maintain network connectivity between the Rocky River area of east Charlotte and N.C. 49. A secondary purpose is to safely accommodate multi-modal uses of the corridor.

Project Study Area

The project study area boundaries are shown in Figure 2, dated October 2017. The study area varies along N.C. 49 to accommodate related traffic flow and connectivity improvements and includes the realignment Back Creek Church Road (SR 2827), as well as existing Back Creek Church Road.

The Project Team has concurred on this date of November 16, 2017, on the project purpose and need as stated above and the project study area as shown in Figure 2.

U.S. Army Corps of Engineers _____

U.S. Environmental Protection Agency _____

U.S. Fish and Wildlife Service _____

North Carolina Wildlife Resources Commission _____

North Carolina Division of Water Resources _____

North Carolina State Historic Preservation Office

Charlotte Regional TPO

North Carolina Department of Transportation

NEPA/404 Merger Team Meeting Agreement

Concurrence Point Number 2: *Preliminary Alternatives to be Studied in Detail*

Project Description: N.C. 49 from John Kirk Drive to I-485 (widen existing roadway); realign Back Creek Church Road (S.R. 2827) on new location to the N.C. 49 and Mallard Creek Church Road (S.R. 2833) intersection; close existing at grade rail crossing at N.C. 49 and Back Creek Church Road, Charlotte, Mecklenburg County. **STIP Project: No. U-5768.**

Alternatives for Detailed Study

Alternatives A and B are carried forward for detailed study. Conventional and Superstreet concepts will be evaluated for each build alternative. Alternatives are described as follows:

- **No-Build Alternative**
- **Build Alternative A:** Best-fit widening along NC 49, relocation of S.R. 2827 (Back Creek Church Road) to NC 49 at S.R. 2833 (Mallard Creek Church Road), traffic flow and connectivity improvements to S.R. 2939 (Old Concord Road) and Thomas Combs Drive, and grade separation on N.C. 49 over S.R. 2833 (Mallard Creek Church Road)/Relocated Back Creek Church Road
- **Build Alternative B:** Same as Build Alternative A, except at-grade crossing on N.C. 49 at S.R. 2833 (Mallard Creek Church Road)/ Relocated Back Creek Church Road.

The Project Team has concurred on this date of November 16, 2017, with detailed study alternatives listed above.

U.S. Army Corps of Engineers

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

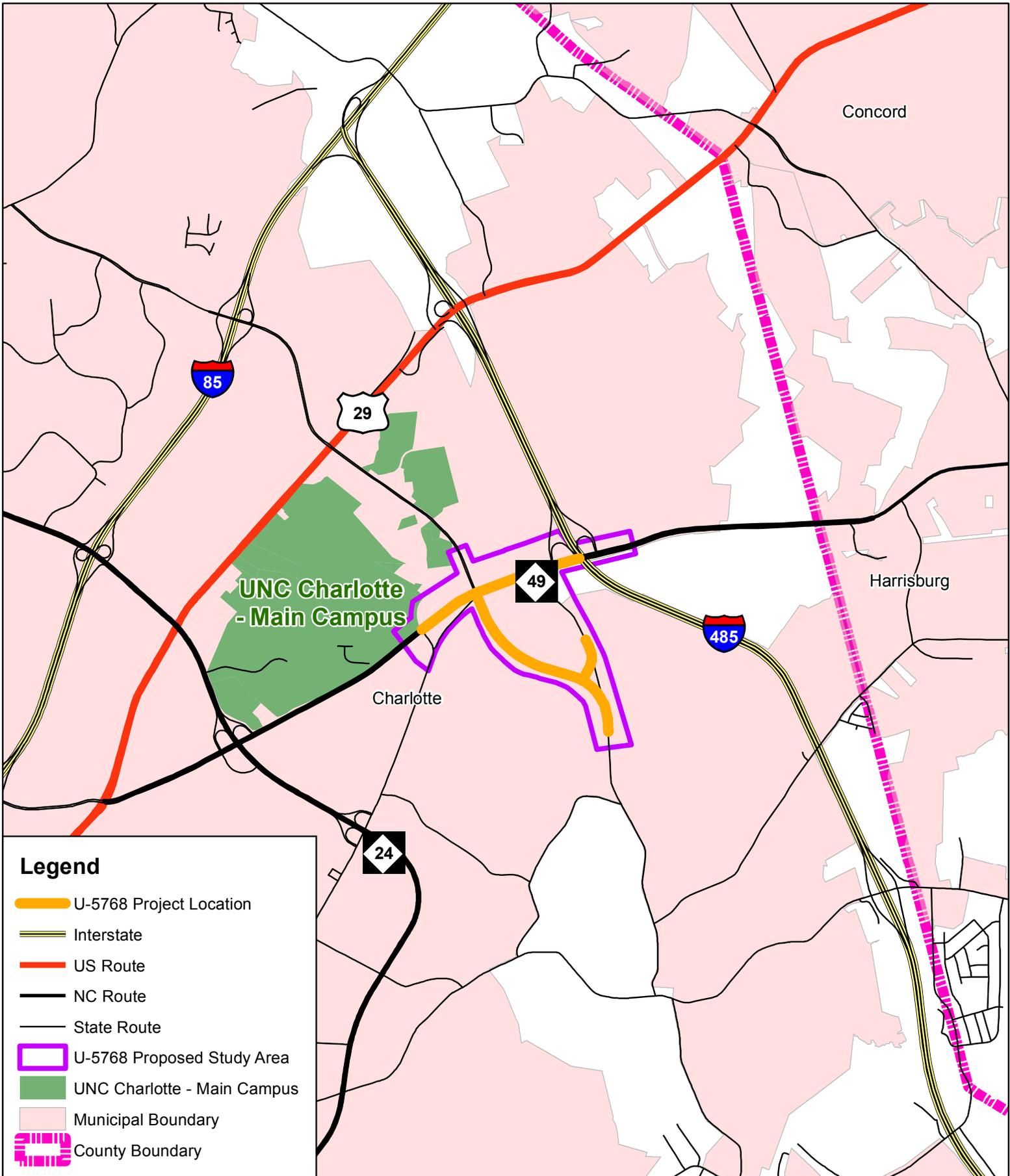
North Carolina Wildlife Resources Commission

North Carolina Division of Water Resources

North Carolina State Historic Preservation Office

Charlotte Regional TPO

North Carolina Department of Transportation



Legend

-  U-5768 Project Location
-  Interstate
-  US Route
-  NC Route
-  State Route
-  U-5768 Proposed Study Area
-  UNC Charlotte - Main Campus
-  Municipal Boundary
-  County Boundary

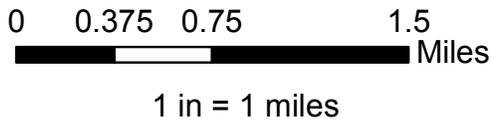


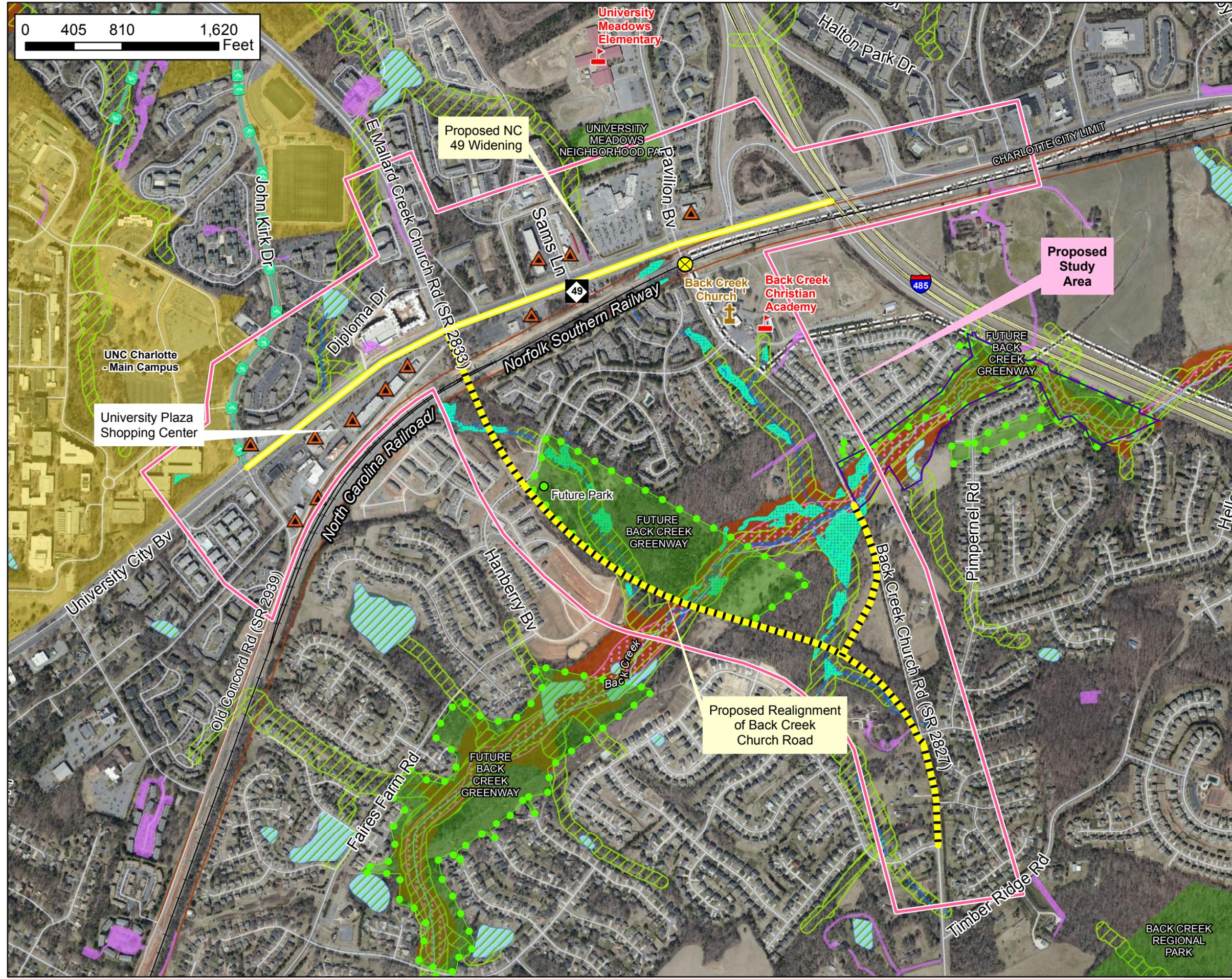
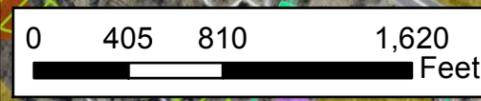
Figure 1:
Project Location Map
 NC 49 Widening and Back Creek
 Church Road Realignment
 STIP Project U-5768
 Charlotte, Mecklenburg County

Figure 2:

Environmental Features Map
NC 49 Widening and Back Creek
Church Road Realignment
STIP Project U-5768
Charlotte, Mecklenburg County
October 2017

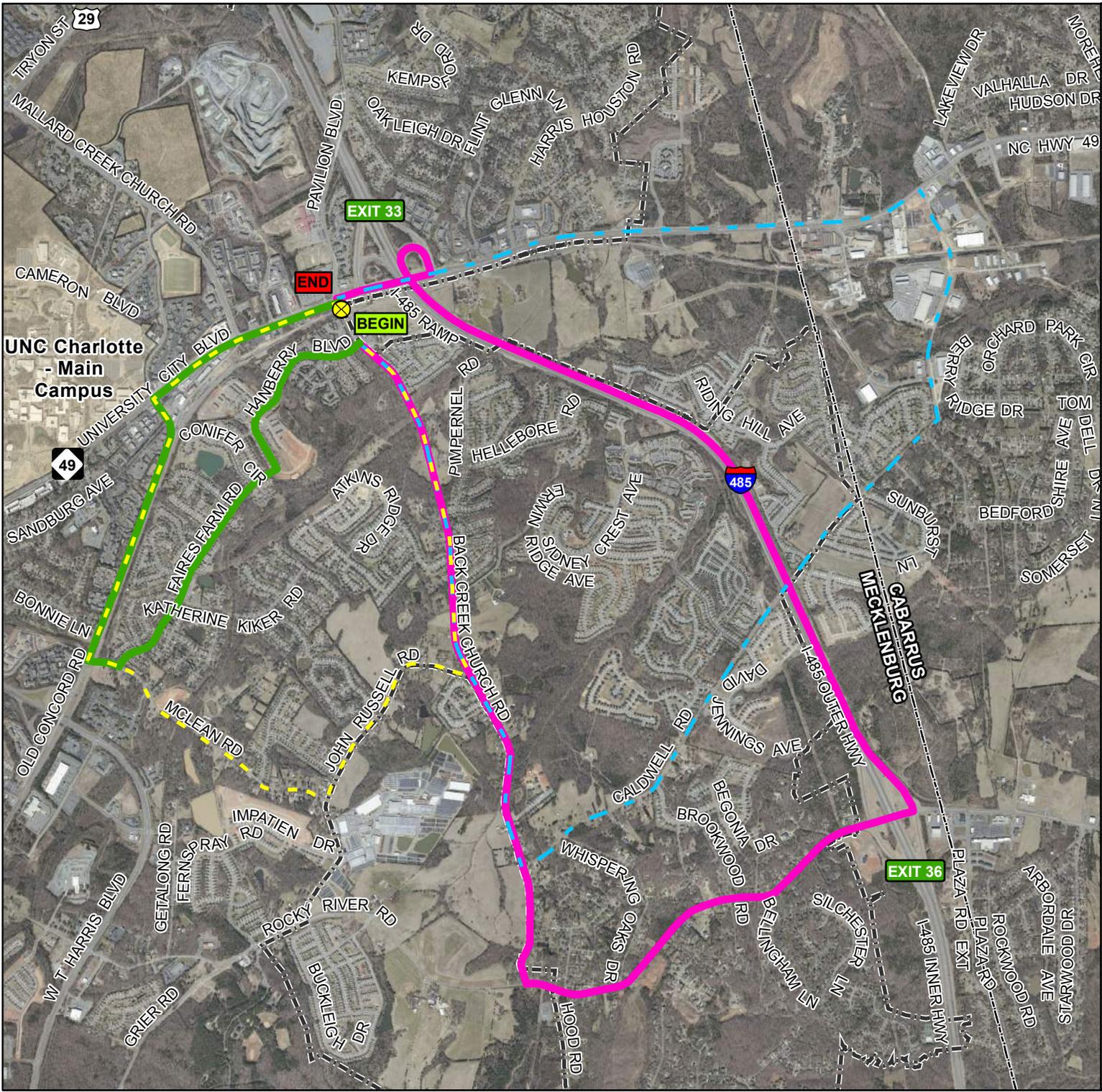
Legend

-  Proposed Study Area
-  Proposed NC 49 Widening
-  Proposed Realignment of Back Creek Church Road (conceptual alignment)
-  Proposed Railroad Crossing Closure at Back Creek Church Road
-  Cemetery
-  Church
-  School
-  Railroad
-  Field Delineated Wetland
-  Field Delineated Jurisdictional Stream
-  303(d) List Stream
-  Bicycle Route
-  Hazardous Materials Site
-  Park
-  Back Creek Greenway
-  NCDOT Mitigation Site
-  Tax Easement
-  Water Quality Buffer
-  NWI Wetland
-  Floodway (FEMA)
-  100-Yr Floodplain (FEMA)
-  North Carolina Railroad/Norfolk Southern Railway ROW
-  UNC Charlotte - Main Campus
-  Charlotte City Limit



**Figure 3:
Alternative Travel Routes
Proposed
Back Creek Church Road
Railroad Crossing Closure**

Proposed NC 49 Widening
and Realignment of
Back Creek Church Road
Mecklenburg County
STIP Project No. U-5768



Legend

Proposed Railroad Crossing Closure at Back Creek Church Road

UNC Charlotte - Main Campus

Charlotte City Limit

County Boundary

Alternate Routes

Route 1 (3.7 miles)

Route 2 (5 miles)

Route 3 (7.7 miles)

Route 4 (7.5 miles)

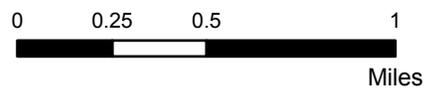
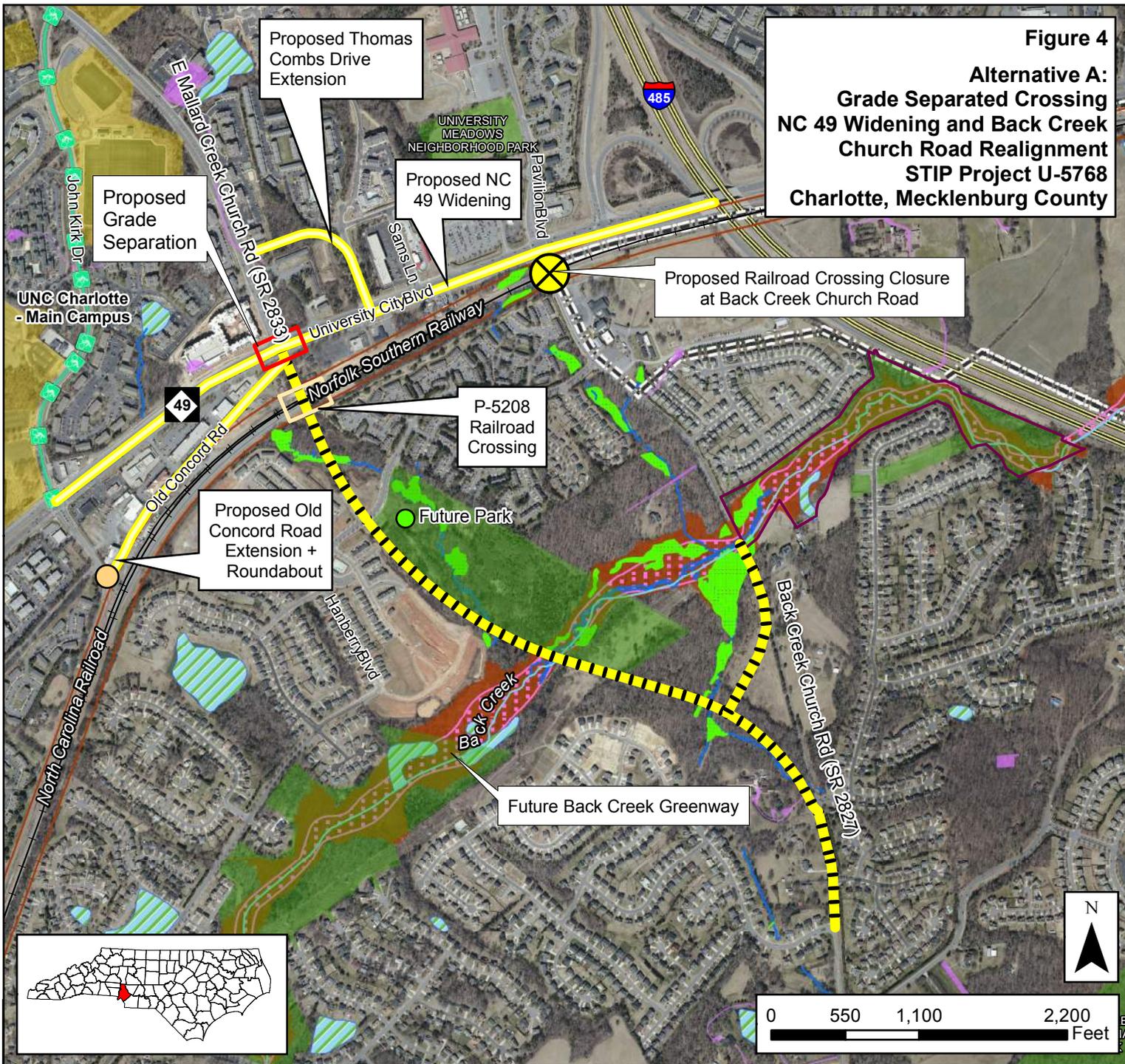


Figure 4

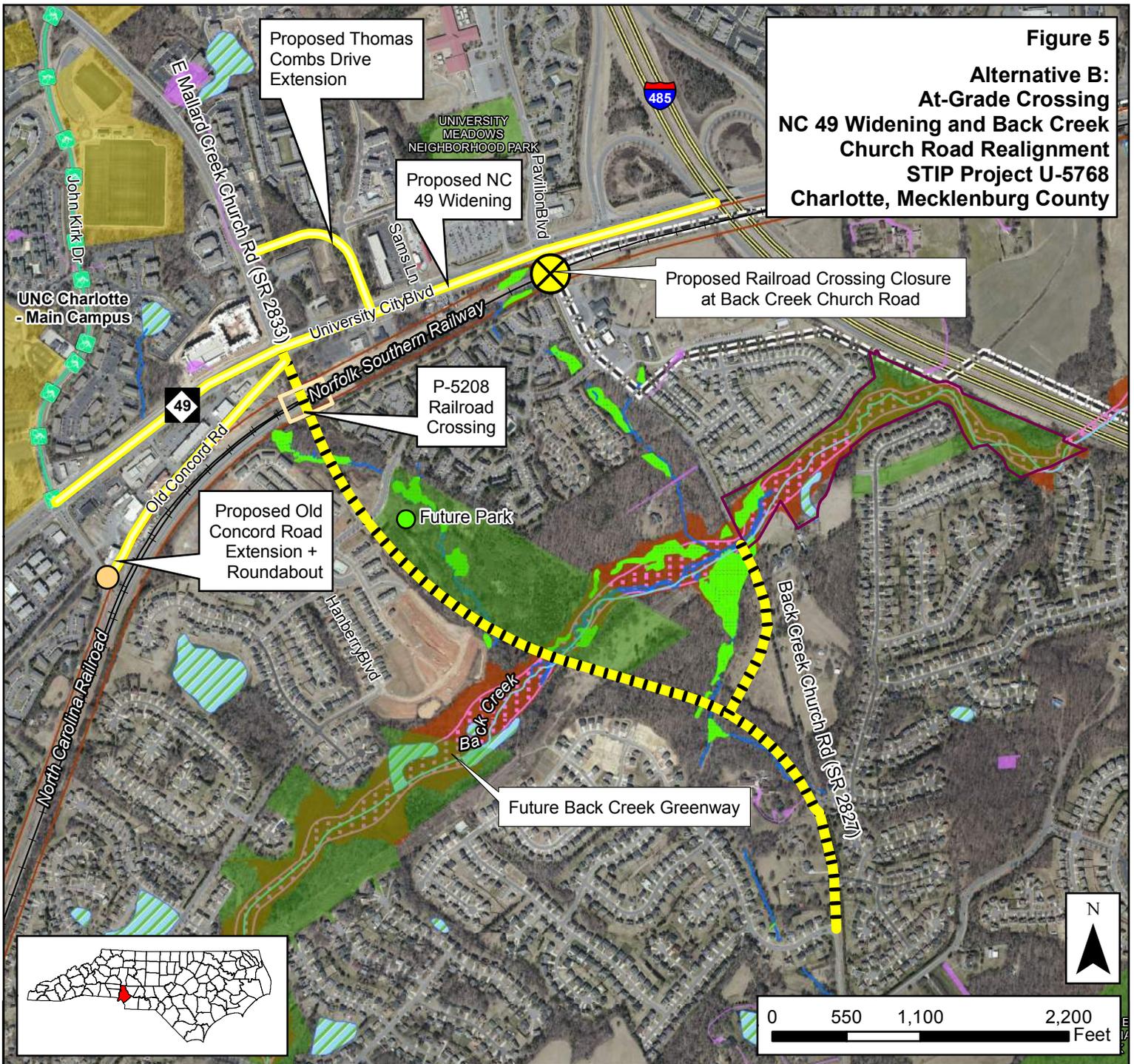
**Alternative A:
Grade Separated Crossing
NC 49 Widening and Back Creek
Church Road Realignment
STIP Project U-5768
Charlotte, Mecklenburg County**



Legend

- | | | | | | |
|--|---|--|---|--|--|
| | Proposed Roadway Improvements | | NCDOT Mitigation Site | | NWI Wetland |
| | Proposed Grade Separation | | Park | | Floodway (FEMA) |
| | Proposed Realignment of Back Creek Church Road (conceptual alignment) | | Tax Easement | | 100-Yr Floodplain (FEMA) |
| | Proposed Railroad Crossing Closure at Back Creek Church Road | | 303(d) List Stream | | North Carolina Railroad/Norfolk Southern Railway ROW |
| | Railroad | | Bicycle Route | | Charlotte City Limit |
| | | | Field Delineated Jurisdictional Wetland | | UNC Charlotte - Main Campus |
| | | | Field Delineated Jurisdictional Stream | | |

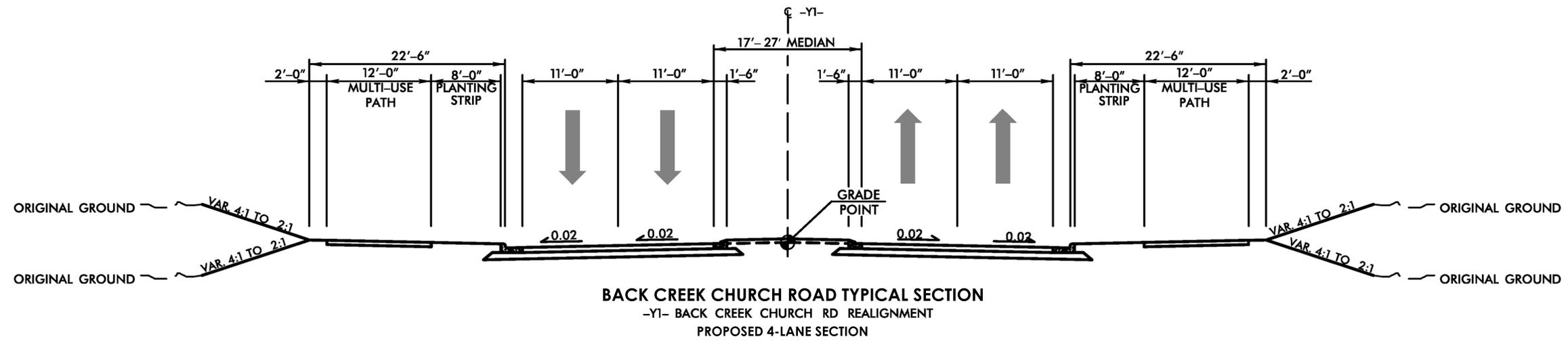
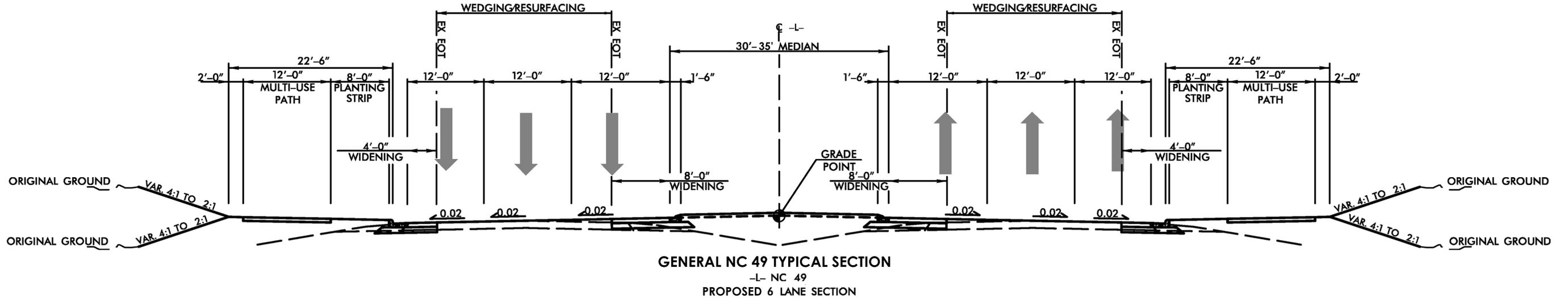
Figure 5
Alternative B:
At-Grade Crossing
NC 49 Widening and Back Creek
Church Road Realignment
STIP Project U-5768
Charlotte, Mecklenburg County



Legend

- | | | | | | |
|--|---|--|---|--|--|
| | Proposed Roadway Improvements | | NCDOT Mitigation Site | | NWI Wetland |
| | Proposed Realignment of Back Creek Church Road (conceptual alignment) | | Park | | Floodway (FEMA) |
| | Proposed Railroad Crossing Closure at Back Creek Church Road | | Tax Easement | | 100-Yr Floodplain (FEMA) |
| | Railroad | | 303(d) List Stream | | North Carolina Railroad/Norfolk Southern Railway ROW |
| | Bicycle Route | | Field Delineated Jurisdictional Wetland | | Charlotte City Limit |
| | Field Delineated Jurisdictional Stream | | UNC Charlotte - Main Campus | | |

FIGURE 6: PROPOSED TYPICAL SECTIONS



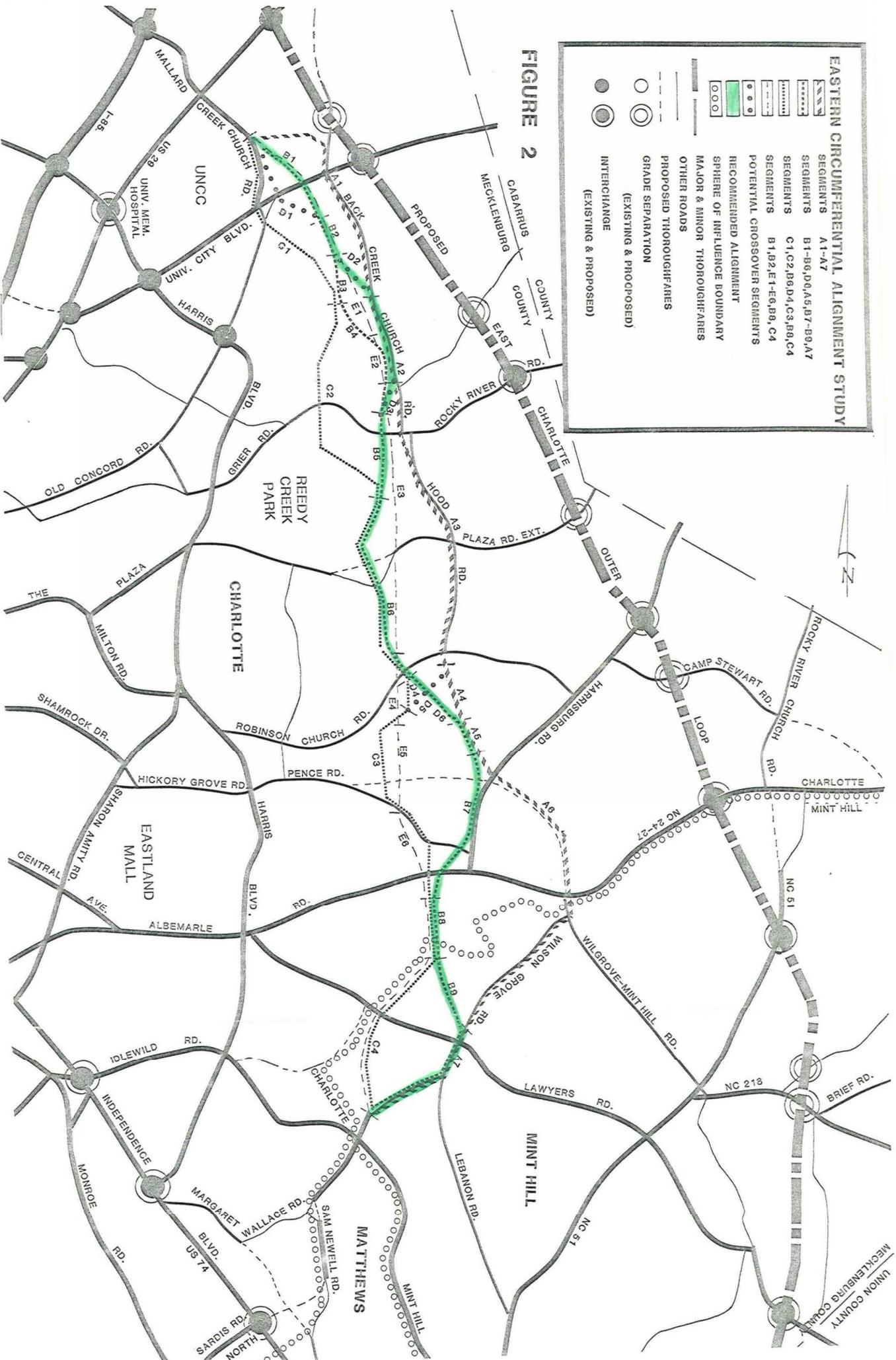
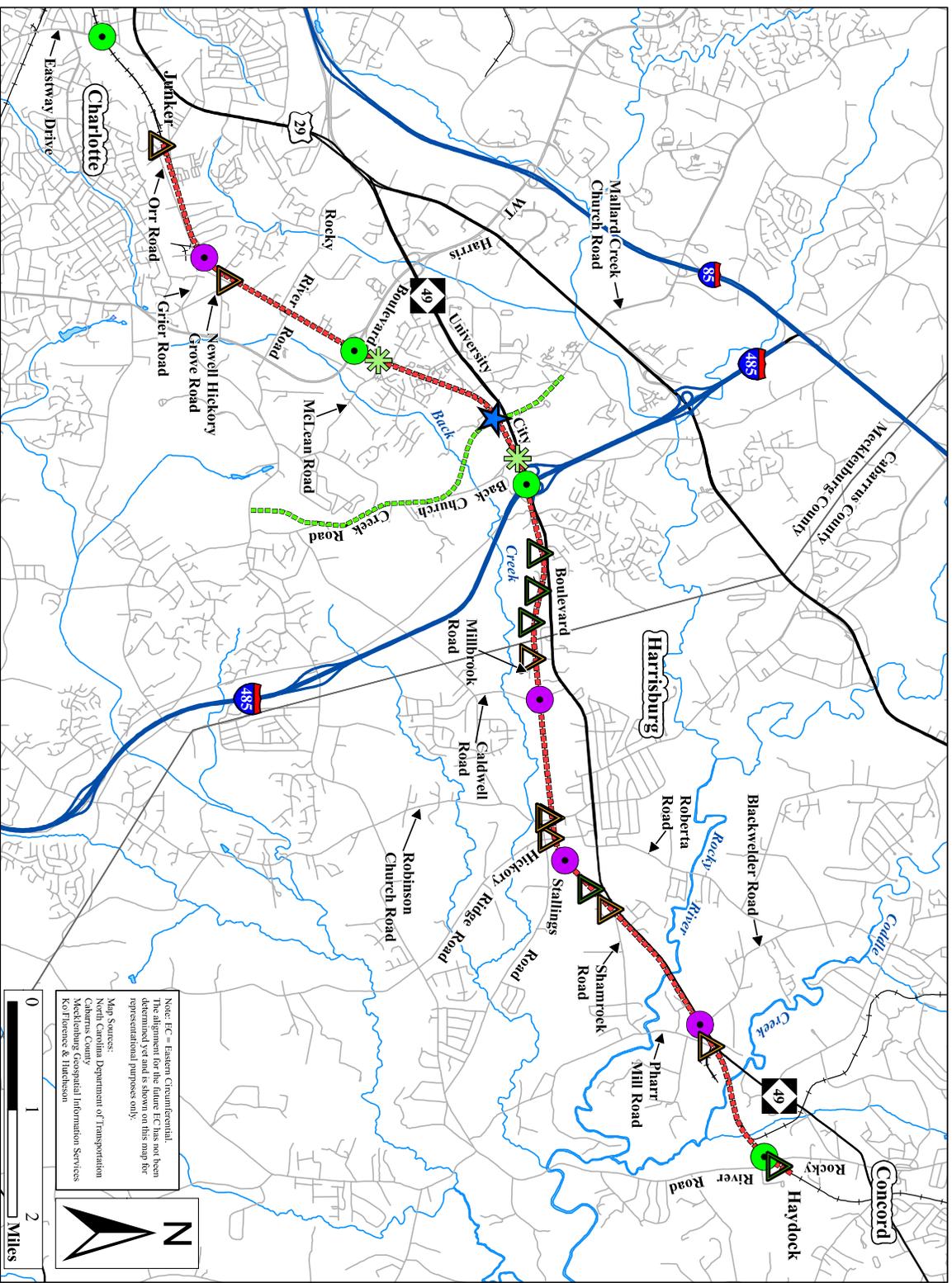


FIGURE 2

EASTERN CIRCUMFERENTIAL ALIGNMENT STUDY

| | | |
|--|------------------------------|----------------------------|
| | SEGMENTS | A1-A7 |
| | SEGMENTS | B1-B6, D4, 5, B7-B9, A7 |
| | SEGMENTS | C1, C2, B6, D4, C3, B6, C4 |
| | SEGMENTS | B1, B2, E1-E6, B9, C4 |
| | POTENTIAL CROSSOVER SEGMENTS | |
| | RECOMMENDED ALIGNMENT | |
| | SPHERE OF INFLUENCE BOUNDARY | |
| | MAJOR & MINOR THOROUGHFARES | |
| | OTHER ROADS | |
| | PROPOSED THOROUGHFARES | |
| | GRADE SEPARATION | (EXISTING & PROPOSED) |
| | INTERCHANGE | (EXISTING & PROPOSED) |





Note: EC = Eastern Circumferential.
The alignment for the future EC has not been determined yet and is shown on this map for representational purposes only.

Map Source:
North Carolina Department of Transportation
Cabarrus County
Mecklenburg Geospatial Information Services
Kof Florence & Hinchelton

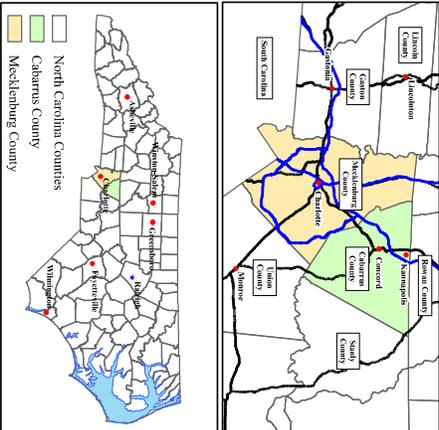


Figure 5 - Recommended Crossing Improvements and Closures

- Project Corridor
- Future CDOT EC
- Interstates
- Major Roads
- Roads
- Railroads
- Streams and Creeks
- Water Bodies
- △ Proposed Private Crossing Closure
- △ Proposed Public Crossing Closure
- Existing Grade Separations
- Proposed New Grade Separations
- ✱ Separate TIP Project
- ★ Grade Separation for Future EC